UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, WA 98101

November 27, 2006

Reply to
Attn Of: ECL-111

Jennie Goldberg
Seattle City Light
Environment & Safety Division
P.O. Box 34023
700 Fifth Avenue, Suite 3300
Seattle, WA 98124-4023

Subject: **EPA Comments on 60% Design Submittals for the Slip 4 Early Action Area Lower Duwamish Waterway Superfund Site, Seattle, Washington**

Dear Ms. Goldberg,

With this letter, EPA is providing comments on the 60% Design Submittals for the Slip 4 Early Action Area of the Lower Duwamish Waterway Superfund Site.

If you have any questions, please contact me at 206-553-2141 or keeley.karen@epa.gov.

Sincerely,

Karen Keeley
Project Manager

cc (hard copy):
Jeff Stern, King County
David Schuchardt, Integral Consulting
Ken Fellows, Parametrix

cc (electronic copy only):
Randy Carman, WDFW
BJ Cummings, DRCC
Kris Flint, EPA
Skip Fox/Carl Bach, Boeing
Brad Helland, Ecology
Erika Hoffman, EPA
Doug Hotchkiss, Port of Seattle
Jeff Krausmann, USFWS
Alison O'Sullivan, Suquamish Tribe
Gary Palcisko, WDOH
Glen St. Amant, Muckleshoot Tribe
Marla Steinhoff, NOAA
Denice Taylor, Suquamish
Craig Thompson, Ecology

EPA Comments on 60% Design Submittal
Slip 4 Early Action Area
Lower Duwamish Waterway Superfund Site

Design Analysis Report

1. Table of Contents. For each Appendix, please list the attachments.

2. List of Figures. The titles for Figure 1-6 do not match.

3. General Comments.

    a. Will the Contractor be required to document (with coordinates) the locations of any pilings that remain below grade within the project area?
    b. Please ensure that the text and drawings clearly show the design for the boundary berm, and clarify that it will be placed prior to dredging and capping.
    c. Minor edits are provided on the attached hard copy.

4. Section 1.1, 3rd P. Add the reference to the EE/CA (Integral 2006a).

5. Section 1.2.4.1., p. 1-6.

    a. P. 1-6, 1st P. Revise text: The SQS was exceeded at 6 stations, and the remaining 20 stations were below SQS (see p. 21 of the EE/CA).
    b. P. 1-6, 3rd P. What is the source of the information in the second sentence?
    c. P. 1-7. Clarify that it was not necessary to perform TCLP analyses given the "20 times rule" and provide the citation to the appendix or attachment in the design submittals where this was evaluated.

6. Figure 1-3. Clarify that the small sliver of sediments near the property boundary is owned by Boeing.

7. Figure 1-3. Discrepancies in pipe numbers and diameter exist between the EE/CA, Ecology's Source Control Action Plan, and the 60% design submittals:

	EE/CA	SCAP	60% Design
Flume	60"	72"	60"
Private SD (2)	6"	(2) 6"	6" (appears to be only 1 outfall)
Private SD	6"	6"	30"

Please ensure that pipe diameters are consistent. It may be useful to clarify when pipe and outfall diameters differ (e.g., is it accurate that the Boeing piping is 30 inch

diameter while the Boeing outfall is 24 inch diameter?).

If the 30 inch private SD is an actual outfall, then Ecology should be made aware of this as it is not mentioned in the Source Control Action Plan. The 30 inch outfall was not mentioned in the EE/CA (see Figure 2-1 and Table 2-1).

8. Section 2.3.3, 3rd P. Delete "and permit timing," and insert text clarifying the need to ensure that the outfall is functioning properly prior to construction of the cap, which is necessary for cap protectiveness.

9. Section 2.5.5, p. 2-10. Provide a reference to EPA guidance for close out reports (Close Out Procedures for National Priorities List Sites, EPA 540-R-98-016).

10. Section 3. The page numbering incorrectly begins with page 3-12.

11. Section 3.2, 2nd P. The citation to USEPA 2004 is incorrect.

12. Section 4. All subsections should refer to dredging and excavation.

13. Section 4.2, 1st P. Please clarify how much of the bank volume is soil versus sediment, using a similar approach as to that presented in the EE/CA. Clarify that the volume estimates are different than those previously identified in the EE/CA and Action Memo because a design level analysis has been completed; the actual boundaries and depths of remediation have not changed.

14. Section 4.2, p. 4-2. The estimated 12 tons of metal debris may be an underestimate.

15. Section 4.3.1. Clarify that all derelict piling are wooden (the removal method, vibratory extraction or dead line pulling, suggests that concrete derelict pilings are not present.)

16. Section 4.3.2, p. 4-3. A performance-based approach for dredging may be appropriate for the Contractor, but additional detail should be provided in the dredge plan to identify the general approach that the Contractor would implement to aid in proper sequencing of the work and in minimizing residuals. Possible language could include specifying a minimum of 2 passes, removing debris first and then completing a cleanup dredge pass, and specifying that both digging and environmental buckets be available for use.

    a. Equipment selection: Consider whether dredging might best be accomplished using a digging bucket where debris is prevalent, and then an environmental bucket for the final pass.
    b. Dredging plan approach: Please describe (and show on the plans) the general sequencing. Will hot spot areas be removed first? Will material be removed in lifts? Even with the understanding that the entire dredged area will be capped, the dredge plan should provide additional detail to allow some enforceability of good practices on Contractor operations.

c. Construction sequencing: Please delete text and notes (e.g., Note 9 on Sheet 5) that incorrectly suggest that dredging will be occurring within 200 feet of previously-placed sediment cap.

17. Section 4.3.2.5. Please identify appropriate QA measures for using tide boards. During a recent project, a radio tide gauge used during the hydrographic survey was found to be faulty (off by one foot). It was determined that as part of QA we should specify that conventional tide gauge boards (used often by dredger) and the NOAA on-line tide gauges needed to be used in tandem (i.e., it may be prudent to specify that the contractors tide board needs to be checked against a specific NOAA tide gauge before they start).

18. Section 4.3.2.7, p. 4-5. Text should indicate that barge dewatering will be subject to monitoring and compliance with water quality criteria as addressed in the Water Quality Monitoring Plan (WQMP).

19. Section 4.4.1, p. 4-6. Text should indicate that any return flow from transloading operations will be subject to monitoring and compliance with water quality criteria as addressed in the WQMP. Is it feasible to transload sediment directly to the existing rail line located directly adjacent to the Crowley Pier? Please address this item.

20. Section 4.4.2, p. 4-7, 4th P. Revise text – TCLP analyses were unnecessary based on the "20 times rule."

21. P. 5-3, 2nd P. It is our understanding that ghost shrimp are not present in river systems such as the Duwamish.

22. Section 5.1. The reference to T_o = thickness for operational considerations (e.g., overplacement allowance). The term overplacement allowance is used in subsequent sections. IT is recommended that this section introduce the concept that overplacement allowance is in addition to the 'minimum required' thickness.

23. Section 5.1.2. Clarify that the nonzero values range from 6 to 12 inches depending on the area.

24. Section 5.2.6, p. 5-13, 2nd P. Regarding cutting of pilings, Section 3 indicates that timber fender piles will be extracted or dead-line pulled.

25. Section 5.2.7.1, 2nd P. The shear strength values (psf) are not shown in Table 5-6 of Appendix A.

26. Section 5.2.8, p. 5-15, 4th P. EPA and the respondents should discuss the effect of consolidation and how it may be interpreted during the Contractor's daily/weekly progress reports, project asbuilts, and long-term monitoring hydrographic surveys.

27. Sections 5.4, 5.5., and 5.6.

a. For each of these Sections, the subsections should be revised to reflect the Minimum Cap Thickness per EPA Guidance (e.g., 5.4.1) and Actual Design Cap Thickness, Cap Materials, and Configuration (e.g., 5.4.2). The introductory paragraphs to each Section (e.g., the 1st paragraph under Section 5.4) should be revised to reflect cap thickness per EPA guidance rather than "required thickness." The final sentence in the 1st paragraph of Section 5.4 should be deleted.
b. Discussions between EPA and the respondents should occur regarding the required cap thicknesses, with regards to clarifying minimum thickness, overplacement allowance, as well as the actual triggers (e.g., early warning levels and performance standards) that may require contingency actions. Clarify that long-term monitoring requires maintaining minimum cap thickness, exclusive of "overplacement allowance." The design submittals need to be clear that the actual overplacement in each area is documented.

28. P. 5-20, 1st bullet, top of page. Clarify that the habitat mix is one-time only placement.

29. Section 5.5.2, 2nd and 3rd bullets. It appears that Table 5-5 shows a 6-in grading layer. Please discuss the use of 'angular broken stone' with EPA, and whether this design is being modified per subsequent comments below. In the last bullet, is this mix placed in the channel as well as under the outfalls?

30. Section 5.6.1, 5th bullet. It appears that the operational thicknesses in this bullet are different than Table 5-5.

31. Table 5-4. In footnote "a", it does not appear that the thicknesses are described in Table 5-2. Add a column showing actual cap placement (the thickness that must be maintained as a performance standard for long-term monitoring). Can the overplacement allowance be footnoted to clarify that it is 6 in on 3" minimum and 6 inches on armor? EPA recommends combining Tables 5-4 and 5-5 in such a manner that all information is presented clearly, with an understanding that this table will be very important in the long-term monitoring plan.

32. Table 5-5. Increase the font size. The 60 inch thickness should be footnoted so it is understood that the basis is shellfishing treaty rights.

33. Section 7.1.1.1, p. 7-1. Provide more rationale for positioning of the point of compliance. For example, clarify that this location is unlikely to be influenced by turbidity from other ongoing activities within the slip (e.g., Crowley operations in the berth, storm drain discharges). Please clarify that the compliance point is approximately 100 m from the western boundary of capping (as opposed to "ongoing construction activities"). It would also be helpful to indicate how far the compliance point is from the western boundary of dredging activities.

34. Section 7.1.1.2, p. 7-2. Please revise the last sentence of this section: "If for any reason DO should drop below 3.5 mg/L within the dilution zone, in-water work should cease immediately."

35. Section 7.1.2.1, p. 7-3, 3rd P. Please make the following addition to the text in the last sentence of this paragraph: "Empirical monitoring of water quality chemistry during dredging at the East Waterway Phase 1...verified that chemicals did not exceed acute water quality standards...".

36. Section 7.1.2.3, p. 7-4 (Capping): Please define what is meant by "cap material is pluviated in it's decent toward the bottom". Consider using a more commonly understood term rather than "pluviated".

37. Section 7.2, p. 7-9, 1st and 2nd bullets: Revise first bullet to read: "Cutting rather than pulling concrete pier pilings will reduce any disturbance of deeper contaminated sediments." Please clarify in the second bullet if the boundary berm is to be placed at the site boundary or at the dredging boundary.

38. Section 7.1.3. This section should include requirements that address debris – e.g., debris sweeps will be performed, and debris will be removed prior to dredging. Also, buckets should be operated such that swinging of buckets over just-dredged areas is minimized. For operational controls for barges, suggest adding that the barge may be slanted to allow water to pass from the high end 'dump' side through filter fabric/ecology blocks to the low end side.

39. Section 7.1.3, p. 7-6. Consideration of the environmental bucket should be allowed. Additional discussion of equipment options and advantages and disadvantages is warranted in order to minimize dispersion of contaminated dredging residuals.

40. Section 8. Please ensure that attorneys from the City and/or County review Section 8 in its entirety.

    a. 8.2.1.1. Revise text:
        1. Delete the sentence starting "Based on the information...".
        2. "EPA will issue a finding that substantive requirements of the 401 certification have been met."
    b. 8.2.1.3. Revise text:
        1. Delete the first sentence.
        2. Move the entire section to a New Section 8.3 "To Be Considered."
    c. 8.2.1.4. Delete the last sentence of this section.
    d. 8.2.1.9. Revise text in 1st sentence: "~~may~~ apply."
    e. 8.2.2.4, 2nd P, 1st sentence. Revise text: "with EPA's finding that substantive requirements of the 401 certification have been met."
    f. 8.2.2.5. Delete all text and simply use language previously approved in the EE/CA, removing references to alternatives. Clarify state substantive requirements of statute, and regulations will be met.

g. 8.2.2.6. Delete the first paragraph. Delete the last sentence of the second paragraph.
h. Please confirm that, as written, both the County's Shoreline Management Act and the City's Shoreline Master Plan are applicable regulations. Does the City's Master Plan supplant the County's Master Plan in certain parts of the City? EPA's understanding is that local requirements (such as Section 8.2.3) are not ARARs. Local requirements should be listed in the New Section 8.3 as TBCs.

41. Figure 9-1.

a. This schedule should be revised to include the early bid notification processes (e.g., is the City required to release a synopsis prior to releasing the bids/specs?).
b. For source control, the schedule should be revised to include receipt of draft and final source control documents, including review times for EPA and respondents.

42. Section 10. EPA legal counsel has reviewed the Institutional Control Implementation Plan, and has determined that adequate information is not available in this plan. EPA understands that the City's attorney will be re-working this plan to provide the type of detailed information that should be provided. Given that we were unable to review an adequately-detailed plan, please provide a revised plan within two weeks. This should give us time to review the plan prior to your submittal of the 100% design documents.

In addition, the ICIP should be revised to include a figure, which would show all property boundaries (with the assumption that the City purchases Crowley property, as planned), and the associated restriction (e.g., hazardous substances remain on site under a waterway cap; hazardous substances remain on site under a slope cap) for each different property owner (e.g., Boeing, City, and Emerald Services). Each property boundary should be shown in a different color, since it is difficult to distinguish between cleanup boundaries, elevation boundaries, and property boundaries. Please confirm whether the southern boundary along the First Ave South property is correctly shown, given some previous discussions about Crowley having retained the top 10 feet of bank when they sold the property to Emerald Services. Footnotes should be used to provide general information on the acreage or lineal feet covered by the institutional control (e.g., the slope cap is estimated to cover approximately 100 lineal feet of bank along First Ave South property, extending from approximately +15 ft to the property boundary line at 0 ft).

<u>Appendix A – Pre-Design Investigation Data Summary Report</u>

43. Section 3.2.4. Clarify that there are six seep samples from five locations.

44. Section 5.2.2. The photograph for the EOF is not in Attachment D – is it in

Attachment E? The folders for Attachment E do not identify which folder this photograph resides in. Please clarify.

45. Figure 2-1. Add a note that sample CC01 is a composite of SC12X, SC13X, and SC16X.

46. Table 3-2.

    a. Correct spelling of "Atterberg."
    b. SB-22. Clarify that this sample is a composite of SB-22 and SB-23. The SB footnote refers to SB01 and SB02, but those labels don't appear in the table so it is confusing.
    c. SC-21D. P. 4-2 indicates that the sample was analyzed for Atterberg.
    d. None of the samples were analyzed for TCLP – these analytes should be footnoted as archived samples that will not be analyzed for TCLP because of the "20 times rule."
    e. SL4-SP06 – This sample does not exist.
    f. Per Table 5-6, there is consolidation data for SC21A.

47. Table 4-1.

    a. The TOC method is Plumb (1981), not EPA 9060. Plumb 1981 was correctly listed in the QAPP.
    b. Clarify whether it is standard for the MDL to differ from the MDL listed in the QAPP.
    c. There were no TCLP analyses for SVOC and pesticides.

48. Table 5-1. Footnote "a" is missing.

49. Table 5-4a and 5-4b. Footnote the definition for sample CC01 (i.e., list sample composites). Footnote sample SB22 to clarify that it is a composite of SB22 and SB23.

50. Table 5-5. On the first page, the right edge of the table does not show all the numbers on the printed page.

51. Table 5-6. Fix the formatting so that Test Hole SC19 is not split between 2 pages; same for SC20 on pages 2 and 3. Footnote that sample SB22 is a composite of 22 and 23.

52. ARI Case Narrative. The narrative indicates that consolidation tests were run using ASTM D2434, rather than the QAPP-specified method of ASTM D-2435 Method B. Please clarify. Note that Table 4-1 of this section does show the QAPP-specified method.

Appendix B – Structural Conditions Observations

53. EPA is not reviewing, commenting on, or approving, this document.

Appendix C – Erosion Analysis

54. Attachment C3, p. 2. The slope values in this table are all the same (0.005) and appear to be estimated values. Please provide a footnote explaining this issue.

55. Attachment C4, Attachment A.

    a. Riprap size is calculated for a 2:1 slope. Please calculate the riprap based on a 3:1 slope and a 3.5:1 slope. Application of the 2:1 slope analysis to flatter areas of the bank may result in placement of coarser-than-required material in the flatter areas.

    b. The required filter size d85 is listed as 0.18 feet (2.2 inches), yet on the next page the proposed filter layer gradation has a d85 of 0.75 inches. Please clarify.

Appendix D – Chemical Isolation Analysis

56. Section 2.1, p. 2-1. An additional assumption is that the groundwater flowing outward through the cap is free of contaminants. This is a reasonable assumption, but justification for the assumption should be provided (reference to existing documents is appropriate).

Technical Specifications

57. Section 01110. Verify quantities. Item D6 says maximum of 27,000 tons of cap material will be placed, whereas the cost estimate indicates substantially more.

58. Section 01270, p. 5. This is a very large and complex bid item to bid lump sum. Consider breaking this up into more biddable items.

59. Section 01270, p. 7. Consider whether it is prudent to include bid items for items with zero quantity.

60. Section 01400, p. 4. Suggest clarifying the scope of the RAWP for the contractor's transloading facility by including a request to provide a site plan, copies of permits, stormwater controls and BMPs, water handling and disposal methods, spill prevention BMPs, etc.

61. Section 02325, 1.09D. This requirement to prevent spillage to the water may not be practical. Spillage during rehandling is likely to occur and should be managed with appropriate BMPs, including placement of an impermeable membrane on the pier deck or similar control, stormwater controls, and cleanup at project completion. Suggest clarifying performance criteria in the specifications and including a conceptual plan on drawings.

62. Section 01450, 1.06. The requirements for Contractor testing of materials could be better organized and clarified. As written, numerous testing requirements are spread throughout the specifications.

63. Section 01450, 1.08. More specific requirements could be added to the CQC Plan. Requirements for the SAP/QAPP are relatively extensive given the limited sampling to be performed by the contractor. The Pre-Construction Test Report schedule conflicts with paragraph 1.06E regarding turnaround times. The contractor should submit all test data for cap material well before 7 days prior to the start of cap placement. Please clarify paragraph 1.08D2. What is "validation" of the commercial testing laboratory (1.08E)?

64. Section 01450, 1.09. Please clarify the duties of the CQC representative.

65. Section 01450, 3.02C1. Note Paragraph B is missing. Paragraph C1 - what is a "validated laboratory"?

66. Section 01450, 3.03. Please clarify the requirements for chemistry data packages (Tier 2, Tier 4).

67. Section 01526, 1.01. Please clarify "engaged in hazardous waste operations" given that all dredge material is Subtitle D waste.

68. Section 01566. Please expand language in 1.12B regarding truck washing and other BMPs as needed to prevent tracking on contamination along haul routes and entrances/exits. Reviewers have recommended that specifications should prohibit sweepers that utilize compressed air to suspend particles for vacuum collection, as these have been shown to spread contamination by generating dust.

69. Sections 01566, 01575, 02325. Consider consolidating the requirements for the transloading facility into a single section for clarity.

70. Section 01724, 1.06B. EPA recommends requiring submittal of electronic files containing processed survey data.

71. Section 01724, 3.08C. Submittals under this section are in paragraph 1.06, not 1.05.

72. Section 01760, 1.04B. Clarify language, as it appears to say that exceeding the legal load limit by 35 percent is allowed.

73. Section 02315. Suggest adding that all dredging must be completed prior to any cap placement.

74. Section 02315 2.02, 2.03. Suggest clarifying whether crushed material is acceptable, and including additional requirements for rock type, etc. similar to 2.05 Habitat Mix.

75. Section 02315, 2.02. Verify that the gradation is consistent with the requirements of the DAR Appendix C2, which calls for a D50 of 1 inch. The specified gradation appears finer grained.

76. Section 02315, 2.03B. Please provide a specification for the GAC.

77. Section 02135, 3.07 C3. Suggest showing the location of the boundary area on the plans. Suggest clarifying the lab turnaround time for these samples, as the contractor will be incurring substantial costs for idle equipment. Uncertainty in the TAT will result in higher bid prices.

78. Section 02135, 3.04G. Add that the completed swale must have positive drainage and constant slope to minimize sediment deposition from stormwater discharges.

79. Section 02325, 3.03. Consider whether it is prudent to perform a sediment dewatering pilot test prior to bidding and providing the results to the contractor. Provide a citation to the WSDOT regulations, clarifying that it is not illegal to transport wet sediments (it is illegal to leak contaminated fluids from those sediments).

80. Section 2325, 3.03B. Provide additional language clarifying that spillage may not occur off-site (currently the text refers only to on-site spillage), and provide more specific language on hauling and transloading requirements (e.g., standard dump and pup trucks are not allowed; off-site transloading shall be accomplished by transfer of intact containers of sediments).

81. Section 02325, 3.05. Clarify how can earthwork be accomplished with land-based equipment when it is prohibited from operating on existing sediment surfaces (3.05A) and no haul roads can be built below +12 ft MLLW (3.05B). Are contractor-placed haul road materials to be removed? Will they be contaminated?

Volume II – Construction Quality Assurance Plan and Water Quality Monitoring Plan

Construction Quality Assurance Plan

82. General. The CQAP should clarify that monitoring and assurance testing requirements may also be identified throughout the project, due to project revisions that may be required by EPA (e.g., silt curtains are not specified, but if they were required, then certain monitoring and assurance testing requirements beyond those in the CQAP would be required).

83. General. Clarify that testing of GAC is not required because only virgin or regenerated GAC will be specified.

84. Section 2.1. In Line 2, revise "remedial" to "removal." Search and replace as appropriate throughout this Plan (e.g., Section 2.1.1 also incorrectly refers to this as a remedial action).

85. Section 3, p. 3-1, 5th bullet: Note that there currently is no discussion in the WQMP of monitoring wastewater discharges associated with de-watering activities.

86. Section 4.2.5. At other projects, EPA has required that chemical and physical testing be conducted prior to transport of material to the site (which is proposed in the CQAP), but also required testing on a batch basis. Please propose an increased batch testing requirement, and identify requirements for the aggregate supplier (e.g., certifications that material is being obtained from the same pile throughout the project).

87. Section 5.2, p. 5-3. No reference is made here to observed turbidity or sheen which would trigger water quality monitoring nor to the BMPs that may implemented based on the results of such monitoring. These issues should be briefly touched upon in this section.

88. Section 5.6.2, p. 5-10 and Section 5.6.3, p. 5-13. No reference is made here to water quality monitoring activities or to the BMPs that may implemented based on the results of such monitoring. These issues should be briefly touched upon in this section. Suggest moving capping-related requirements and operational controls from pages 5-6 and 5-7 (Section 5.4.2.2) to Section 5.6.3.

89. Section 5.6.2.2. For import fill material, acceptance criteria must be less than ½ of the SQS. Achievable laboratory PQLs are less than the SQS criterion for most analytes; some compounds are problematic to analyze (e.g., dimethylphthalate, pentachlorophenol, hexachlorobutadiene, benzoic acid, and 4'4-DDE) and PQLs exceed the one-half screening criteria. Identify those compounds for which the PQL would be higher than the ½ screening criterion so that it is clear that an undetected value that is greater than the ½ screening criterion is still acceptable.

90. Appendix A, Removal Action SAP.

a. Confirm that the pre-construction sediment samples, which will be archived, will not exceed holding times prior to analysis. For example, the holding time is 14 days to extraction for PCBs.
b. Table 2-2. Add Stations PE-9, -10, -11, and -12.

91. Appendix B, Removal Action QAPP

a. Sections A7 and B5.2. References to ARI's laboratory control limits were found in Appendix J and the ARI Quality Assurance (QA) Plan, not in Appendix K. This should be corrected.
b. Section B4 Analytical Methods. In order to achieve the reporting limits shown in Table A6-2, the MDL & RL Summary Tables in ARI's QA Plan show 50 grams of sample into a 1 ml final extract volume for SVOCs, and 25 grams of sample into a 1 ml final extract volume for PCB Aroclors. This should be clarified with the lab and corrected if necessary.
c. Table B2-1 Sample Containers, Preservation, Holding Times, and Sample Volume. ARI's QA Plan identifies the sample container type for metals in water (equipment rinsate blanks) as high-density polyethylene. This should be corrected.
d. Section C2 Reports to Management. Corrective actions that require communication between the laboratory and the project manager in order to resolve, need to be documented in the laboratory case narrative with the hardcopy data.

Water Quality Monitoring Plan (WQMP)

92. Page 1-2, Section 1.1 (Objectives), 1st bullet. Clarify how "transportation and offsite disposal of dredged and excavated materials" would qualify as an activity requiring in-water monitoring. Suggest revising this component to read "return flows associated with dredged material dewatering and barge-to-truck off-loading." It should be noted that currently neither of these elements is explicitly discussed in the 60% WQMP. The next iteration of the WQMP must include monitoring for any return flows or discharges associated with on-site dewatering and transloading activities.

93. Page 2-1, Section 2.1 (Sampling design and rationale), 3rd P. Please indicate the approximate distance of the compliance sample from the work site boundary line and provide more of a rationale for it's placement. For example, explain that this location is unlikely to be influenced by other ongoing activities within the slip which may influence turbidity measurements (Crowley operations in the berth, storm drain discharges).

94. Page 2-1, Section 2.1 (Sampling design and rationale), 5th P. Due to the short

timeframe associated with the dredging and bank excavation elements of the project, it will be important to pre-coordinate with the lab to ensure that it is able to conduct TSS and PCB analysis in an expedited fashion. We also recommend that a back-up laboratory be identified in the event of unforeseen delays on the analysis turnaround time. (There is no text revision associated with this comment.)

95. Page 2-2, Section 2.1.2 (Sampling scheme for water quality monitoring), 1st P. Please revise the third sentence: "If demolition activities cause observable turbidity within or outside the mixing zone, sampling will also occur during this phase."

    It would also be helpful to organize the four sub-sections describing activity-specific monitoring (subsections 2.1.2.1 – 2.1.2.4) in the order that they are expected to occur during construction. Assuming that the monitoring results of one activity may influence the level of concern regarding another, reorganizing this section may help clarify why proposed monitoring is more intensive for some activities and less so for others.

96. Page 2-2, Section 2.1.2.1 (Bank Excavation). Please add text indicating how long active excavation is expected to take place. This information will enable the reader to understand the proposed number of monitoring events in relation to the expected duration of excavation activities.

    Since the planned duration for bank excavation is 13 days (from Figure 9-1 in the Design Analysis Report), the intensive monitoring component of this activity should include at least three compulsory grab sampling events. Also, all grab sample collection at the compliance station should include concurrent collection and analysis of a grab sample from the ambient station. Please revise the text of the first and second paragraphs to read as follows:

    "An intensive monitoring program will occur during the first five days of active excavation. *In situ* water quality measurements will be collected twice daily (at slack tide and ebb tide) at both the ambient and compliance stations (Table 2-1). On the first, third and fifth days after initiation of excavation, one grab sample (at the depth with maximum turbidity) each will be collected from both the compliance and ambient stations and submitted for expedited PCB and TSS analysis. If water turbidity exceedences occur at the compliance station at any other times during this period, one water grab sample will be collected at both the compliance and ambient stations (at the depth with maximum turbidity).

    "After the first week of excavation, a moderate monitoring program will take place (Table 2-1). *In situ* water quality measurements will be taken at two non-consecutive days per week, and measurements will be taken twice daily (at slack tide and ebb tide) at the ambient and compliance stations. Water grab samples will only be collected at compliance and ambient stations if exceedences occur."

97. Page 2-3, Section 2.1.2.2 (Sediment Dredging). Please add text indicating how long dredging is expected to take place so that the number of monitoring events can be placed in context with the duration of the activity.

    If the planned duration for dredging is 7 days (from Figure 9-1 in the Design Analysis Report), the intensive monitoring component of this activity should include at least two compulsory grab sampling events. As indicated above for the bank excavation monitoring, all grab sample collection at the compliance station should include concurrent collection and analysis of a grab sample from the ambient station. Please revise the text of the first and second paragraphs to read as follows:

    "An intensive level of monitoring will occur for the duration of the seven days of active dredging. *In situ* water quality measurements will be collected twice daily (at slack tide and ebb tide) at both ambient and compliance stations (Table 2-1). On the first and third days after initiation of dredging, one grab sample (at the depth with maximum turbidity) each will be collected from both the compliance and ambient stations and submitted for expedited PCB and TSS analysis. If water turbidity exceedences occur at the compliance station at any other times during this period, one water grab sample will be collected at both the compliance and ambient stations (at the depth with maximum turbidity).

    If dredging activities extend longer than seven days, a moderate monitoring program will take place (Table 2-1). *In situ* water quality measurements will be collected on two non-consecutive days per week, and measurements will be taken twice daily (at slack tide and ebb tide) at the ambient and compliance stations. Water grab samples will only be collected at compliance and ambient stations if exceedences occur."

98. Page 2-3, Section 2.1.2.3 (Capping). Please add text indicating how long waterway capping is expected to take place so that the number of monitoring events can be placed in context with the duration of the activity.

    Please provide more text to explain why a reduced level of monitoring is appropriate for this activity. You might mention that the material being placed in clean and that the methods used for placement will minimize turbidity/resuspension of in-place sediments. Also, please delete the third sentence in this paragraph ("No water grabs are expected to be sampled during capping") and replace it with the following: "If any water turbidity exceedances occur at the compliance station, EPA will be consulted as to the need for water grab sample collection."

99. Page 2-3, Section 2.1.2.4 (Demolition). Please add text indicating how long in-water demolition activities are expected to take place. Please revise this section as follows:

    "If demolition activities cause observable turbidity or sheen inside or outside the mixing zone, *in situ* water quality measurements will be collected at the ambient station and compliance station. Upon any water turbidity exceedances at the

compliance station, EPA will be consulted regarding the potential need for grab sampling."

100. Page 2-4, Section 2.2 (ARARs – dissolved oxygen). Please revise the last sentence of this section: "If for any reason DO should drop below 3.5 mg/L within the dilution zone, in-water work should cease immediately."

101. Table 2-1 (WQM sampling scheme): Revise to reflect changes suggested in earlier comments on Pages 2-2 and 2-3.

102. Table 2-2 (WA WQS): This table is a little confusing. Please revise the heading in the second column to read "standard." Also, add "10 ug/l" as the acute standard for PCB Aroclors and reference Table 2-3.

103. Page 3-1, Section 3.1.1 (Team organization and responsibilities). Please add that Erika Hoffman will be writing the Water Quality Certification for this project.

104. Page 3-2, Section 3.2 (Field sampling schedule). The range of times given for project completion (10-120 days) is confusing. Please clarify.

105. Page 4-3, Section 4.4 (Water quality feedback and response mechanisms). Mention that boat/barge traffic associated with Crowley may confound measurement of turbidity associated with construction activities. Discussion of feedback and response should make the distinction between information from *in-situ* monitoring (primarily DO and turbidity) and laboratory data from grab sampling (TSS and PCBs). The process described on this page and in Figure 4-1 is applicable to the *in-situ* monitoring, only. A separate process/decision tree should be presented for interpreting and responding to the results of laboratory analysis. The steps outlined in the text and figure should also indicate that concurrent verification samples will be taken at the ambient station.

106. Appendix A.

a. Sections A7 and B5.2 (same comment in Construction QA Plan above).
b. Table A6-2 (Target analytes): Revise table to report acute marine standard for PCBs rather than Chronic as it will be the former that is applied to determine compliance.
c. Section B7 Instrument/Equipment Calibration and Frequency. If the field instrument will be calibrated from Vancouver B.C. and shipped here for use, what is the corrective action for re-calibration in the event that the instrument fails a calibration check while in the field?
d. Table B2-1 Sample Containers, Preservation, Holding Times, and Sample Volume. For PCB Aroclors, according to ARI's MDL & RL Summary Table, in order to achieve the 0.01 ug/l reporting limit, they will be extracting a 1000 ml sample volume into a final extract volume of 0.5 ml. According to the information in the Table, this represents the entire sample volume, which leaves no room for re-extraction in the event of a failure in the analysis.

Drawings

107. Suggest providing a sediment/debris transloading facility plan sheet identifying site preparation/improvements, stormwater controls, temporary fencing/access controls, etc. The approach requiring contractor-designed facilities is sound, but minimum standards of care should be specified to ensure the work is done appropriately.

108. Sheet 2. Elliott Bay is misspelled on the Vicinity Map.

109. Sheet 3. Existing riprap legend is not a "cap type". Provide abbreviation key (i.e., "PSD", etc.).

110. Sheet 5. Note 9 is not justified. Dredging should be completed prior to placement of any cap material. Note 12 should clarify if iterative sampling and dredging will be required under any circumstances. In the remediation summary table, RA3, delete word "incidental" before "bulkheads."

111. Sheet 6. The project baseline might be more readily maintained and utilized if located on land, or the contractor could be required to stake out an offset baseline to aid oversight activities. Horizontal coordinates should be provided for all major corners of the project limits.

112. Sheet 7. Transloading sediment to rail at the Crowley pier appears to be precluded, why? Notes 9, 10, and 11 are subparts of Note 8.

113. Sheet 8. Suggest adding general notes for environmental protections.

114. Sheet 10. Provide additional details on demolition requirements [e.g., saw cut concrete pad at tank location (Picture 5)].

115. Sheet 11. The second table should be titled "excavation coordinates." At Sta 2+00 east bank, where is the transition between 2.5:1 and 3:1 slope?

116. Sheet 12. Suggest providing intermediate dredging approach notes or drawing to indicate dredging sequence for residuals management.

117. Sheet 13. In Section F, is the slope on the east bank 2:1 or 2.5:1 per plan sheet?

118. Sheet 14. Sections G and H, are slopes on east bank 2:1 or 2.5:1 per plan sheet? Why is existing mudline lower than existing riprap?

119. Sheet 15. Should some of the removed ecology blocks be re-used as vehicle barricades on concrete slab? Why is existing mudline lower than existing riprap?

120. Sheet 16. The proposed contours at head of waterway are in error, at north end, contours are shown for 10, 5, and 0 feet, yet moving south, contours start again at 2 feet. Indicate centerline for drainage swale. Provide more detail for riprap splash pads to ensure proper construction and verify the design as shown is in accordance with design analyses in Appendix C3. Show horizontal limits of boundary berm ends.

121. Sheet 16. The cap materials do not appear consistent with the DAR Appendix C.

    a. Cap armor a 2:1 mix of riprap sizes per Attachment C4 and is appropriate for the 2:1 sloped areas of slope cap based on wave erosion, yet the same material (cap armor) is used to armor the cap between STA 5+50 and 6+50 despite Attachment C2 indicating a 3-inch-minus-cobble is sufficient to resist erosion from prop wash (note would be a coarser material than the waterway cap material). Please clarify.

    b. Per Details 1 and 3 on Sheet 20, waterway cap material is to be placed between the toe of the slope cap and the drainage swale; however, this is not shown on the plan sheet or sections. Please clarify. Is it appropriate to cite dredge coordinates on this sheet?

122. Sheet 17. Verify east bank side slope (2:1?).

123. Sheet 18. What is "El.= -3." on Section G? Verify east bank side slope.

124. Sheet 20.

    a. Note 2 – How are outfall extensions included in the bid items?

    b. Detail 2 – Heavy loose riprap cannot end in a thin layer; suggest quarry spall apron around riprap perimeter.

    c. Coordinate plans with Appendix C3 which indicates choking of riprap with quarry spalls.

    d. Constructing 18-inch layers of cap armor is not really feasible considering that the cap armor material contains up to 18-inch-diameter stones and many 15-inch-diameter stones. EPA understands that this is being refined in the 100% design documents.